

### **REMARKS**

The Office Action dated November 20, 2003 has been reviewed carefully and the application amended in a sincere effort to place the same in condition for allowance.

Reconsideration of the rejection of those claims which were rejected and allowance of the same in addition to those previously allowed are respectfully requested on the basis of the following remarks.

#### **Claims 1-21**

Allowance of these claims have been noted with appreciation.

Claims 1, 6 and 7 have been amended to order to correct minor inaccuracies. More specifically, as amended the claim 1 refers to "devolatilized precursor extract" throughout. Claims 6 and 7 have been amended to insert the proper reference to degrees centigrade.

#### **Claims 24 and 34**

While a detailed description of the objection to these claims was not contained in the body of the Action as received, it is assumed that they were objected to as depending from rejected claims.

Claims 24 and 34 have been amended so as to include the recitals of claim 22 from which they depended.

#### **Claims 27 and 28**

The Examiner's alertness in noting that these claims were duplicates has been appreciated and claim 28 has been cancelled in order to avoid the duplication.

#### **Claims 22, 23, 25-33 and 35 - Section 103(a)**

These claims were rejected under Amagi et al. 3,917,806.

Claim 23 has been cancelled as being redundant.

Claim 22 which is the sole independent claim in this grouping has been amended. It recites *inter alia* providing a carbon foam precursor, creating a powder therefrom and then heating the powdered carbon foam precursor at a pressure of about 0.5 to 1.5 atmospheres at a temperature of about 20°C to 500°C for about 1 minute to 72 hours to effect oxidation thereof. The thus treated powdered carbon foam precursor is then cooled to room temperature, followed by placing the oxidized carbon foam precursor powder in a mold and heating the oxidized carbon foam precursor powder in the mold in an inert gas environment at a pressure less than 20 atmospheres to a temperature of about 330°C to 600°C to foam the powdered precursor within the mold followed by

cooling of the foam to room temperature. These recitals do not involve new matter and have a basis for example at page 6, line 29 through page 7, line 19 of the specification.

The Amagi reference discloses preparation of a porous carbon molding by mixing a pitch of certain specific recited properties in respect of softening point, carbon content and a specific hydrogen/carbon ratio and a nitrobenzene-insoluble fraction of certain characteristics with at least one aromatic hydrocarbon having a boiling point of 200°C or higher. This mixture is then formed into a desired shape followed by immersion in a solvent in which the pitch is hardly soluble, but the aromatic hydrocarbon is easily soluble and is extracted by the solvent. This produces a porous pitch material which is oxidized and calcined. If activation is desired, steam vapor or air is employed to ~~produce an activated carbon material~~. Oxidation is said to occur between room temperature and 400°C and carbonizing is said to occur at a temperature higher than 600°C.

By contrast, Applicants' method as set forth in amended claim 22, the sole independent claim in this group, produces a carbon foam precursor in powder form which as a result has a high surface area to volume ratio during the initial heating to effect oxidation thereof. This is followed by shaping said oxidized carbon foam precursor powder by placing it in a mold with the mold being heated in an inert gas environment at a pressure less than 20 atmospheres to a temperature of about 330°C to 600°C to foam the powder precursor within the mold followed by cooling to room temperature.

It is respectfully submitted that one following the teaching of Amagi would require, in addition to very specific pitch selection properties, admixture of an aromatic hydrocarbon of a specific characteristic followed by forming the mixture into a suitable shape which is then followed by solvent removal of the hydrocarbon to provide a porous pitch material which is subjected to thermal treatment at 400°C followed by calcining at higher than 600°C to produce the porous carbon material.

This would not teach one skilled in the art to employ Applicants' method of thermally treating the powder to effect oxidation under specific recited pressure, temperature and times followed by cooling and placing the thus treated powder in a mold to shape it after which foaming is effected. It is respectfully submitted that Amagi teaches in the opposite direction and that claim 22, as amended, is patentable thereover.

**Claims 25-27, 29-33 and 35**

It is respectfully submitted that all of the claims in this group are patentable based on the dependency directly from amended independent claim 22. In addition, certain features which will be mentioned herein are submitted as adding to patentability.

With respect to claim 25, which recites the carbon foam precursor being a "coal extract", it is noted that there is no express mention of coal in the Amagi disclosure and all of the examples, to the extent they indicate the source of the pitch, make reference to a petroleum or oil base. The same comments apply to claim 26 which makes express reference to "de-ashed coal extract" and "unashed coal extract" as well as to claim 27 which recites "hydrogenated coal extract".

Claim 29 recites employing "mesophase pitch" as a carbon foam precursor.

The recital of claim 30 of "petroleum based pitch" is not asserted as contributing to patentability apart from its dependence on amended claim 22. With respect to claim 31, Applicants make reference to use of water or steam during the carbon foam precursor oxidation stage of the method. By contrast, the Amagi reference refers to activating the porous carbon material that had previously formed porous carbon material. See column 4, lines 20-30.

With respect to claim 33, it recites devolatilizing the precursor powder prior to oxidation. Such a combination is not disclosed in Amagi.

Dependent claim 35 relies primarily on its dependency from claim 22 for patentability, but does confirm the process enabling low pressure foaming, i.e., at about 0.5 to 1.5 atmospheres.

It is respectfully submitted that claims 22, 25-27, 29-33 and 35 are patentable.

**SUMMARY**

In view of the foregoing, it is respectfully submitted that in addition to previously allowed claims 1 through 21 and previously objected to claims 24, 34, amended independent claim 22 and remaining dependent claims 25-27, 29-33 and 35 are in proper form for issuance of a Notice of Allowance. Such action is respectfully requested at an early date.

Respectfully submitted,



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